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**VIA ECFS**

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, DC 20554

Re: Comment on WiMAX Forum Petition Proposing Rules for the Aeronautical Mobile Airport Communications System (AeroMACS); RM-11793

Dear Ms. Dortch:

On July 19, 2017, the Wireless Telecommunications Bureau ("Bureau") issued a Public Notice (DA 17-696) seeking comment on the above-referenced Petition for Rulemaking of the WiMAX Forum for proposed rules for the Aeronautical Mobile Airport Communications System ("AeroMACS") service in the United States in the 5000-5030 and 5091-5150 MHz bands.[1]

Lockheed Martin Corporation ("Lockheed Martin") recognizes the benefits to airlines, airport operators, and the FAA that deployment of an AeroMACS system offers. At the same time, Lockheed Martin is deeply concerned about the impact on the ability to access the same C-band spectrum for Aeronautical Mobile Telemetry ("AMT") operations in support of critical flight testing – whether by Lockheed Martin or other aerospace industry sector members. In this context, we advocate a balanced spectrum use approach, including an opportunity for testing of system compatibility to be conducted in the United States.

**Background.**

Lockheed Martin is a publicly-traded, global security and aerospace company that is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products, and services. As a commercial manufacturer of both military and civil manned aircraft and unmanned platforms and systems at various locations in the United States, Lockheed Martin relies heavily upon the currently

[1] Lockheed Martin limits its comments to the 5091-5150 MHz band, for which there is an allocation for AMT operations. We do note that the 5000-5030 MHz band seems particularly well-suited to dedicated AeroMACS operations, perhaps in support of FAA-exclusive operations to afford protection to those critical services.

available, albeit limited, spectrum resources for crucial AMT operations at its manufacturing locations to conduct flight safety, performance, and efficiency testing and to facilitate aircraft platform certification.

As a licensee of numerous FCC flight test authorizations, Lockheed Martin (including its subsidiary, Sikorsky Aircraft Corporation) is a routine user of the available spectrum resources for AMT operations and, thus, is also cognizant of the significant constraints that exist in the current operational environment. The demands of production schedules and related, increasingly intensive, testing requirements for advanced aircraft and their on-board systems pose challenges in coordinating flight tests, particularly given the limited amount of spectrum and efficient geographic concentration of such flight operations, translating quite simply into increased manufacturing and testing costs. In light of this environment, Lockheed Martin has a strong interest in maximizing its access to any spectrum resources allocated to AMT.[2]

**C-band Telemetry Operations.**

Lockheed Martin's customers – here and abroad – are considering specifications that require the development and manufacture of aircraft platforms capable of hosting C-band telemetry transmitters, in large part because of the well-known congestion in the established L- and S-band bands. The installation of C-band transmitters, for example, has been included in the development of updated versions of the F-16, to support future diversity in flight testing options, especially at military ranges where C-band AMT operations are already authorized and equipped. Furthermore, the development and requisite testing of various unmanned aerial platforms, by Lockheed Martin and others, adds further pressure on the limited current resources.

Recent advancements in the design of AMT receivers and filtering technology has made increasingly viable the development and buildout of an infrastructure to support AMT operations in the C-band. Lockheed Martin is contemplating significant capital investment to develop an infrastructure to support its flight testing requirements at its own manufacturing locations in the C-band on a future basis. However, the uncertainty of access to this critical spectrum frustrates planning efforts. Indeed, all American manufacturers who rely heavily upon spectrum resources in support of these critical telemetry operations require regulatory certainty as to the future of this band.

Together, these circumstances require Lockheed Martin to advocate for the establishment of a solid regulatory framework for access to the 5091-5150 MHz band to support future critical flight testing operations at a limited number of manufacturing and testing locations throughout the United States. To that end, we urge the FCC to use this opportunity to engage the multiple stakeholders broadly to develop a comprehensive spectrum strategy prior to the issuance of a Notice of Proposed Rulemaking in this proceeding.

In particular, notably lacking from the public record is an understanding based on real-time testing of how AeroMACS and AMT operations will co-exist in the band. While we understand that such testing has occurred at locations outside of the United States, Lockheed Martin encourages FAA support for an opportunity for such testing to be conducted in the U.S. to demonstrate the technical capabilities of adjacent service operations. Lockheed Martin believes that such testing, and the analysis of the results, is crucial for all parties, and will

[2] The International Telecommunication Union, at WRC-07, allocated three additional spectrum bands for AMT. Since then, the FCC has only added the 5091-5150 MHz band to the U.S. Table of Allocations for AMT operations (on a co-primary basis with AeroMACS). We welcome the opportunity to develop methods for sharing the band with AeroMACS, all the while highlighting that access to the subject band is crucial to address the exponential increase in the number and type of measurements required to ensure the safety of new aircraft and their variants, an objective undeniably in the public interest.

minimize the burden on the FAA for developing a coordination mechanism for operations in the 5091-5150 MHz band and permit the FCC to issue a fully informed notice at the appropriate point in the future.

**Conclusion.**

Lockheed Martin recognizes that a number of stakeholders have an interest in the efficient and cooperative use of the 5091-5150 MHz band for both AeroMACS and AMT operations. We also believe that a variety of regulatory and technical solutions exist to permit both AeroMACS and AMT, at the limited number of sites where it is likely to be utilized, to exist in the band. Mindful of the challenges that are presented in striking an effective balance among those multiple interests, Lockheed Martin urges an opportunity for real-time testing to be conducted at a location of the FAA's selection and caution on the part of the FCC to permit the parties to engage in further discussion.

Respectfully submitted,

/s/ Jennifer A. Warren

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